

Patent claims

1. Apparatus for coating the inner surface of a tunnel section with sprayed concrete comprising

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a) a spray nozzle (7),

b) a spray lance (4) at whose one end the spray nozzle a) (7) is arranged,

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c) a carrier (1), on which the spray lance b) (4) is fixed and

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d) a connection point for a connecting line for the delivery of sprayed concrete, which is preferably located on the spray nozzle a) (7),

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it being possible for the spray lance b) (4) and the spray nozzle a) (7) in each case to be moved by means of joints,

**characterized in that**

there are

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e) a joint (5) which connects the carrier c) (1) and the spray lance b) (4) to each other and mounts the spray lance b) (4) in such a way that the spray lance b) (4) can be moved in rotation about the vertical axis (6),

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f) a joint (12) via which a segment (9) of the spray lance b) (4) that faces the spray nozzle a) can be raised upwards and lowered downwards,

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g) a joint (14) via which the segment (9) of the spray lance b) (4) that faces the spray nozzle a) can be lengthened or shortened telescopically,

h) a joint (16) via which the spray nozzle a) (7) can be moved in rotation about the longitudinal axis (17) of the segment (9) of the spray lance  
b) (4) that faces the spray nozzle a) (7), and

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i) a joint (19) via which the spray nozzle a) (7) can be moved in such a way that the outlet opening (18) of the spray nozzle a) (7) can be brought close to or away from the longitudinal axis (17) of the segment (9) of the spray lance  
b) (4) that faces the spray nozzle a),

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a control device k), with which the movements of the spray lance b) (4) can be directed via the joints e) (5), f) (12) and g) (14), and a control device l), with which the movements of the spray nozzle a) (7) can be directed via the joints h) (16) and i) (19), are provided.

20 2. Apparatus according to Claim 1, characterized in that the control device k) and the control device l) can in each case be operated manually, without computer assistance, with the aid of two joysticks, one joystick belonging exclusively to the control device k) and the other joystick belonging exclusively to the control device l).

3. Apparatus according to Claim 1, characterized in that the control device k) is computer-operated and the control device l) can be operated manually, without computer assistance, with the aid of a joystick.

35 4. Apparatus according to one of Claims 1 to 3, characterized in that the carrier c) (1) is arranged on a mobile chassis (2).

5. Apparatus according to one of Claims 1 to 4, characterized in that a segment (9) of the spray

lance b) (4) that faces the spray nozzle a) is formed as a telescopic arm (13).

6. Apparatus according to one of Claims 1 to 5, characterized in that a segment (8) of the spray lance b) (4) that faces away from the spray nozzle a) (7) can be extended in the direction of the spray nozzle a) (7), so that, by means of appropriate extension and retraction, the distance between carrier c) (1) and the spray nozzle a) (7) can be varied, provision being made that, during operation, the segment (8) of the spray lance b) (4) that faces away from the spray nozzle a) (7) is fixed in an extended position and, during transport and parking, the segment (8) of the spray lance b) (4) that faces away from the spray nozzle a) (7) is fixed in a correspondingly retracted position, in which the distance between carrier c) (1) and spray nozzle a) (7) is relatively small.
7. Vehicle having an apparatus according to one of Claims 1 to 6.
8. Method of coating the inner surface of a tunnel section with sprayed concrete with the aid of an apparatus according to one of Claims 1 to 6, characterized in that, the spray nozzle a) (7) is kept at a distance of 1 to 3 m at right angles to the inner wall of the tunnel during the spraying process.
9. Use of an apparatus according to one of Claims 1 to 6 for the production of coatings in tunnel and mine construction.